Small Business Innovation Research/Small Business Tech Transfer

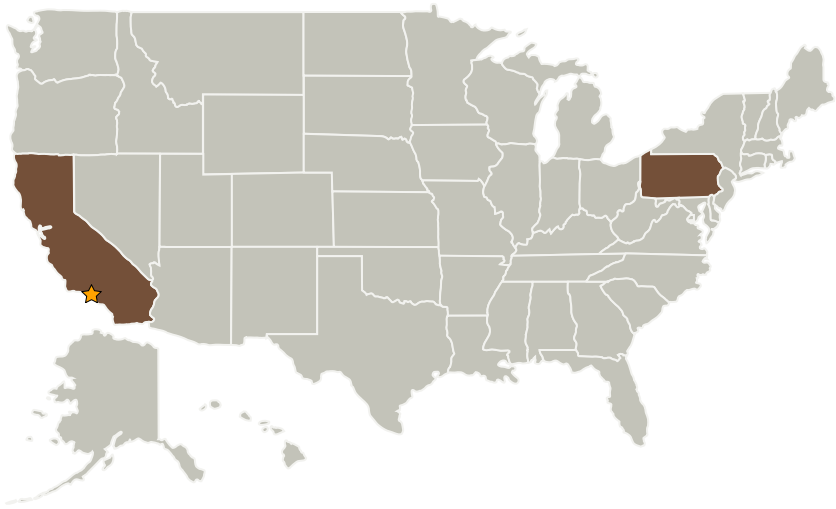
Vapor Compressor Driven Hybrid Two-Phase Loop, Phase II

Completed Technology Project (2007 - 2010)

Project Introduction

The Phase I project successfully demonstrated the feasibility of the vapor compression hybrid two-phase loop (VCHTPL). The test results showed the high temperature-lift capability and robust operation under transient heat loads of the VCHTPL. At the end of Phase I, the VCHTPL technology reached the NASA's defined Technology Readiness Level (TRL) 4 (Component/breadboard validation in a laboratory environment). The principal Phase II objective is to elevate the VCHTPL technology to NASA's Technology Readiness Level (TRL) 6: System/subsystem prototype demonstration in a relevant environment. This will be achieved through addressing the key technical and integration issues identified in Phase I of the proposed program. During Phase II, multiple generations of hardware will be designed, fabricated and tested to demonstrate the capability of the vapor compression loop technology in meeting the thermal performance, form factor, mass and reliability requirements for NASA's lunar missions. Five technical tasks plus a reporting task are planned to achieve the Phase II technical objectives.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★Jet Propulsion Laboratory(JPL)	Lead Organization	NASA Center	Pasadena, California
Advanced Cooling Technologies, Inc.	Supporting Organization	Industry	Lancaster, Pennsylvania

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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Jet Propulsion Laboratory (JPL)

Responsible Program:

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Primary U.S. Work Locations	
California	Pennsylvania

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX14 Thermal Management Systems
  - TX14.1 Cryogenic Systems
    - TX14.1.3 Thermal Conditioning for Sensors, Instruments, and High Efficiency Electric Motors